

## REMARKS

Applicants respectfully request reconsideration of this application as amended.

### Office Action Summary

Claims 1-36 have been rejected under 35 U.S.C. §103(a) as being unpatentable. In particular, claims 1-14 and 24-25 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Publication No. 2002/0113649 of Tambe et al. ("Tambe") in view of U.S. Patent No. 5,422,929 of Hurst et al. ("Hurst"), with U.S. Patent No. 4,277,655 of Surprenant ("Surprenant") to indicate a well-known motivation. Claims 15-23 and 26-35 are rejected under 35 U.S.C. §103(a) as being unpatentable over Tambe as applied to claims 1-14 and 24-25, and further in view of U.S. Patent No. 6,507,606 of Sheno et al. ("Sheno"). Claim 36 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Sheno and further in view of Hurst, with Surprenant to indicate a well-known motivation.

Claims 37-49 have been allowed. Therefore, the following remarks are directed to the rejected claims.

### Status of Claims

Claims 1-49 are pending in the application. Claims 1-5, 7, 14, 24-25, and 37 have been amended. No claims have been added. No new matter has been added. No claims have been canceled.

## Claim Rejections

In the Response to Arguments section, it appears that the Office Action concedes that the limitations, as set forth in claims 1-14 and 24-25, are not taught in Tambe. In particular, the Response to Arguments section of the Office Action only discusses Hurst with respect to claims 1-14 and 24-25. (*see* Office Action, 04/10/2006, pages 3-5.) Applicants respectfully request the Examiner to provide references to Tambe supporting the Examiner's assertions in the Response to Arguments section on claims 1-14 and 24-25.

Claims 1-14 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Tambe in view of Hurst, with Surprenant to indicate a well-known motivation. Applicants respectfully disagree with the Examiner's assertions and characterization of claim 1.

Applicants amended claim 1 to remove the limitation relating to a central office controller having a power supply. Applicants respectfully maintain disagreement on the Office Action's assertions and characterization of the central office controller having a power supply limitation. Applicant, however, submits that issues relating to this limitation are now moot due to the removal of the limitation.

Claim 1 as amended recites:

A system for improving transmission of Digital Subscriber Line (DSL) signals, the system comprising:

a plurality of loop extenders coupled to a plurality of local loops for amplifying upstream and downstream DSL signals transmitted over a first local loop and a second local loop selected from the plurality of local loops; and

**a loop extender communications module having a power supply** coupled to the first local loop and the second local loop for receiving power and control signal and providing power and control signal to the first local loop and the second local loop, and coupled to the plurality of loop extenders for providing the control signal and power to the plurality of loop extenders.

(emphasis added.)

The Office Action states:

As per claim 1, Tambe discloses...a loop extender communications [module having a] power supply coupled to the central office controller [having a] power supply via the first local loop and the second local loop, and coupled to the plurality of loop extenders for providing the control signal and power to the plurality of loop extenders (figures 4 and 5, pages 4-5, paragraphs [0043] to [0052]). Tambe doesn't specifically disclose that the power is suppl[ied] by loading supply voltage between a first local loop and a second local loop having a first node couple to the first loop and a second node couple to the second loop. Hurst discloses that the power is suppl[ied] by loading supply voltage between a first local loop and a second local loop (figure 4; column 8, line 61 to column 9, line 8.) Tambe and Hurst are analogous art because they are from the same field of endeavor. At the time of the invention, **it would have been obvious to a person of ordinary skill in the art to incorporate in the DSL repeater disclosed by Tambe the power supply disclosed by Hurst. The suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater and also to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two direction of transmission and matching input impedance (this second motivation is well known and can be found in Surprenant US 4277655 A abstract).**

(Office Action, 04/10/2006, pages 7-8.)(emphasis added.)

As noted above, claim 1 requires a loop extender communications module having a power supply. The Office Action points to Tambe, Hurst, and Surprenant as disclosing this requirement. (see Office Action, 04/10/2006, pages 7-8.) It is submitted that these references, either alone or in combination, do not teach a loop extender communications module having a power supply.

The Office Action asserts that "it would have been obvious to a person of ordinary skill in the art to incorporate in the DSL repeater disclosed by Tambe the power supply disclosed by Hurst," where the "suggestion/motivation for doing so would have been to use a very well known way to supply power from the CO to the repeater." (Office Action, 04/10/2006, page 8.) Applicants submit that the Examiner has not provided a reference to show how incorporating the DSL repeater taught in Tambe with the power supply taught in Hurst is a well-known way to

supply power from the CO to the repeater. If the Examiner is relying on facts that are not on record as common knowledge to arrive at applicants' claim limitation noted above, the Examiner is respectfully requested to provide evidentiary support of such. The Examiner's attention is directed to MPEP 2144.03(C).

Further, the Office Action cites to Surprenant to suggest a motivation to incorporate the DSL repeater taught in Tambe with the power supply taught in Hurst. (Office Action, 04/10/2006, page 8.) In particular, the Office Action asserts that "the suggestion/motivation for [incorporating the DSL repeater taught in Tambe with the power supply taught in Hurst] would have been...to provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two direction[s] of transmission and matching input impedance." (Surprenant, Abstract.)

Applicant respectfully disagrees. In full, the cited passage in Surprenant states: **"Impedance networks coupled to gain repeater hybrid transformers provide minimum operating power loss with maximum power transfer between the repeater circuit and subscriber loop while maintaining adequate transhybrid loss between the two direction[s] of transmission and matching input impedance."** (Surprenant, Abstract.)(emphasis added.) The impedance networks coupled to gain repeater hybrid transformers provide a linear and continuous gain change in DSL repeaters to compensate for subscriber loop impedance changes. (see Surprenant, column 1, lines 55-58.) The loop extender circuit in Surprenant provides a control signal to the variable gain amplifiers according to the impedance of the subscriber loop. (see Surprenant, column 1, line 67 to column 2, line 2.) In turn, the variable gain amplifiers in series circuit connection with a subscriber loop maintain constant subscriber loop line loss independent of line lengths. (see Surprenant, column 1, lines 6-10.) Surprenant is silent on minimizing operating

power loss, while maximizing power transfer, using a DSL repeater, such as one taught in Tambe, with a power supply, such as one taught in Hurst.

As described above, the Examiner's references to Tambe, Hurst, and Surprenant do not teach a loop extender communications module having a power supply, as required by claim 1. The cited references are silent on this requirement. Therefore, applicants submit that claim 1 is patentable over the cited references.

Given that claims 2-14 depend on claim 1, applicants submit that claims 2-14 are also patentable over the cited reference.

Claims 24-25 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Tambe in view of Hurst, with Surprenant to indicate a well-known motivation. Applicants respectfully disagree with the Examiner's assertions and characterization of claim 24.

Claim 24 as amended recites:

A method for improving transmission of DSL signals, the method comprising:  
providing power to a **loop extender communications module having a power supply** by supplying a supply voltage between a first local loop of a plurality of local loops and via a second local loop of the plurality of local loops for providing power to the plurality of loop extenders; and  
transmitting control signals to a **loop extender communications module having a power supply** via the first local loop and via the second local loop, receiving the control signals, and broadcasting the control signals via the loop extender communications module having a power supply to the plurality of loop extenders.

(emphasis added.)

As noted above, claim 24 requires a loop extender communications module having a power supply. The Office Action points to Hurst as disclosing this requirement. (*see* Office Action, 04/10/2006, pages 3-5.) This reference does not teach a loop extender module having a power supply.

Applicant requests Examiner to specify the portion of the Response to Arguments section applicable to claims 24-25. The Examiner describes a portion of Hurst relating to the remote locational sectionalization of a repeater by the transmission of a start loop signal from a central office to a mid-span repeater. (*see* Office Action, 04/10/2006, pages 3-5.) This cited portion of Hurst involves repeatedly looping a signal from the central office to the repeater network in order to locate an unresponsive repeater. Even if the Examiner intended to reference this portion of Hurst with respect to claims 24-25, applicants respectfully disagree with the Examiner's assertions and characterization. As noted above, Hurst does not teach a loop extender communications module having a power supply, as required by claim 24. Therefore, applicants submit that claim 24 is patentable over the cited reference.

Given that claim 25 depends on claim 24, applicants submit that claim 25 is also patentable over the cited reference.

Claims 15-23 and 26-35 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Tambe and Hurst as applied to claims 14 and 24 above, and further in view of Shenoi. Applicants submit that Tambe and Shenoi fail to cure the deficiencies noted above with respect to Hurst. Given that claims 15-23 depend, directly or indirectly, on claim 1 and claims 26-35 depend, directly or indirectly, on claim 24, applicants submit that claims 15-23 and 26-35 are patentable over the cited references.

Claim 36 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Shenoi and further in view of Hurst, with Surprenant to indicate a well-known motivation. Applicants submit that Shenoi and Surprenant fail to cure the deficiencies noted above with respect to Hurst and, therefore, claim 36 is patentable over the cited references.

In conclusion, applicants respectfully submit that in view of the arguments set forth herein, the applicable rejections have been overcome.


If the Examiner believes a telephone interview would expedite the prosecution of this application, the Examiner is invited to contact Daniel Ovanezian at (408) 720-8300.

If there are any additional charges, please charge our Deposit Account No. 02-2666.

Respectfully submitted,

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